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EXAMINER	
WONG, ALLEN C	

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/808,192
Filing Date: March 14, 2001
Appellant(s): GAUTIER ET AL.

Russell Gross
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 11/15/04.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1, 2, 5/2/1, 5/1, 6 and 7.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

The amendment after final rejection filed on 7/15/04 has been entered.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: Claims 1, 2, 5/2/1, 5/1, 6 and 7 stand rejected under 35 U.S.C. 102(b) as being anticipated by Odaka et al. (US Patent No. 5,317,397).

(7) Grouping of Claims

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because claims 1, 2, 5/2/1, 5/1, 6 and 7 that are grouped to stand or fall together.

(8) Claims Appealed

A substantially correct copy of appealed claims 1, 2, 5/2/1, 5/1, 6 and 7 appears on pages 6-8 of the Appendix to the appellant's brief. The minor errors are as follows: Since there is no claim 5/1/6 in the set of claims, the claims that are being appealed are claims 1, 2, 5/2/1, 5/1, 6 and 7.

(9) Prior Art of Record

5,317,397	ODAKA ET AL	5-1994

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5/2/1 and 5/1 are rejected under 35 U.S.C. 102(b) as being anticipated by Odaka et al. (5,317,397).

Regarding claims 1, 6 and 7, Odaka discloses a variable bitrate video encoding method comprising, for encoding a sequence of frames (col.15, ln.35-67, Odaka

discloses the encoding of a group of frames, GOP, where a GOP has I (intracoded), P (predictive) and B (bi-directional) frames; that in col.16, ln.44-46, Odaka discloses the coding order of the respective pictures within a GOP and note fig.17 is a variable bit rate video coding apparatus and method), at least a quantization step of an input bitstream (col.17, ln.12-13 and fig.17, element 704), a coding step of said quantized bitstream (col.17, ln.15-16; fig.17, element 712 performs variable length encoding to the quantized bitstream), and a control step of the quantization step with respect to a buffer occupancy at the output of said coding step (col.17, ln.31-33, in fig.17, element 717 controls the quantizer 704 by adjusting the quantization step size with respect to the buffer occupancy of buffer 715 at the output of the coding step element 712), said method being characterized in that it also comprises an analysis step, for defining a reserve of bits indicating a number of bits used for coding each frame is either greater or less than a predetermined number (col.22, ln.48-57, col.23, ln.9-45 and col.24; Odaka discloses the analysis step where the parameters related to the input bitstream are updated at each picture or frame, the allocation of reserve bits are updated at each picture or frame for efficient coding of the picture data and that the virtual buffer is used for occupying the reserve bits and help prepare the proper application of the amount of bits needed for each picture by changing the quantization step size; and in col.24, ln.39-50, Okada disclose defining a reserve of bits (ROBC) indicating a number of bits used for coding each frame is either greater or less than a predetermined number), and an additional control step, for maintaining, increasing or decreasing the quantization step value according to the state of said reserve of bits (col.28, ln.6-14; Odaka discloses

increasing the quantization step size if the buffer content is larger than the threshold (bit budget), ie. reserve of bits is negative, so that the bit rate is reduced, and Odaka discloses decreasing the quantization step size if the buffer content is smaller than the threshold (bit budget), ie. reserve of bits is positive, so that the bit rate is increased to spend more bits; thus, Odaka checks the status of the reserve of bits to determine if the quantization step size needs to be modified, and if the reserve bits is zero or if the buffer content is equal to the threshold, then the quantization step size is not changed, ie. maintained; thus, Odaka discloses that buffer underflow and/or overflow conditions can be monitored and properly controlled).

Regarding claim 2, Odaka discloses an encoding method according to claim 1, characterized in that the quantization step value is modified only if said reserve of bits reaches critical values (col.28, ln.6-14; Odaka discloses increasing the quantization step size if the buffer content is larger than the threshold (bit budget), ie. reserve of bits is negative, so that the bit rate is reduced, and Odaka discloses decreasing the quantization step size if the buffer content is smaller than the threshold (bit budget), ie. reserve of bits is positive, so that the bit rate is increased to spend more bits; so thus, Odaka checks the status of the reserve of bits to determine if the quantization step size needs to be modified during critical conditions, such as the buffer underflow and overflow).

Regarding claims 5/2/1 and 5/1, Odaka discloses an encoding device to implement an encoding method (fig.17 is an encoding apparatus or device that

implements the encoding method). Thus, claims 5/2/1 and 5/1 are rejected for the same reasons as claim 1.

(11) Response to Argument

Regarding the last line on page 3 to line 4 on page 4, lines 21-24 on page 4, and lines 4-10 on page 5 of appellant's arguments, appellant argues that Odaka does not disclose "defining a reserve of bits (ROBC) indicating a number of bits used for coding each frame is either greater or less than a predetermined number", as required by claim 1. After careful consideration and meticulous inspection, the examiner respectfully disagrees. Odaka's col.24 further discloses the description of the limitations of the allocated amount of bits used to encode the frame data, and especially, Odaka's col.24, lines 39-50 discloses that if the allocated amount of bits determined exceeds the predetermined percentage of 23%, of the CAG (constant-allocate-GOP) or the fixed allocate amount of bits, then the formula (inequality) 7 of col.24 discloses that the amount of allocated bits will be either reduced by 23%. Thus, high coding efficiency is ensured, and the number of bits used (ROBC) for coding each frame is either greater or less than a predetermined number.

Further, Odaka et al.'s col.22, ln.48-57 and col.23, ln.9-45 were relied upon for teaching the aforementioned limitation. Odaka's col.22, ln.48-57 discloses the rate control technique of allocating a certain amount of bits to each picture in a group of pictures with the recursive rate control scheme of by utilizing a virtual buffer and the adjustment and control of the quantization step size to vary the bit rate, and in turn, vary or update the number of allocated bits needed to encode each picture, ie. reserve of bits

(ROBC) that indicates a number of bits used for coding each frame. By doing so, Odaka's col.17, ln.31-33 and fig.17, element 717 controls the quantizer 704 by adjusting the quantization step size with respect to the buffer occupancy, ie. reserve of bits (ROBC) stored, at element 715 at the output of coding step element 712.

Moreover, in col.23, ln.9-45, Odaka discloses the analysis in that the parameters related to the input bitstream are updated at each picture or frame, the allocation of reserve bits are updated at each picture of frame for efficient picture data coding and the virtual buffer is used for occupying the reserve bits and help prepare the proper application of the bits amount needed for each picture by changing the quantization step size. In col.23, ln.16-29, Odaka defines the reserve number of bits in the form of a LOBG or left-over-bits-GOP and takes the LOBG and adds the LOBG to the next following group of pictures. And, in regards to the citation of col.23, ln.34-45, Odaka reinforces the concept that the allocation of bits or the reserve of bits (ROBC) is restricted by the ratios of quantiztion step sizes set for I, P and B pictures for ensuring high coding efficiency and no deterioration in picture quality. In other words, the restrictions to the ratios of the quantization step sizes are the limits that Odaka sets in order to set thresholds or predetermined number limits, based on the reserve of bits available, for each picture type so that the bits used to code each picture or frame are either greater or less than a predetermined number.

Thus, Odaka teaches the limitation "defining a reserve of bits (ROBC) indicating a number of bits used for coding each frame is either greater or less than a predetermined number", as required by claim 1.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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AW
March 15, 2005

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